

PARK CITY MUNICIPAL CORPORATION
SOILS ORDINANCE AREA ENVIRONMENTAL MANAGEMENT SYSTEM

2010 ANNUAL REPORT

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Prepared by: Park City Municipal Corporation (PCMC)
445 Marsac Avenue
P.O. Box 1480
Park City, Utah 84060-1480
Jeff Schoenbacher, Environmental Coordinator
(435) 615-5058
jschoenbacher@parkcity.org

Submitted to: Utah Department Environmental Quality
168 North 1950 West
Salt Lake City, UT 84114
Mo Slam, Project Manager
(801) 536-4282

United States Environmental Protection Agency
Region 8
999 18th Street
Suite 500
Denver, CO 80202
Kathy Hernandez, Project Manager
(303) 312-6101

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Addendums

- [Park City's Landscaping and Maintenance of Soil Cover Ordinance](#)
- [Certificate of Compliance](#)
- [Park City Environmental Information Handbook](#)
- [Soils Ordinance Home Owners BMP Brochure](#)
- [Lead Awareness Letter](#)
- [Compliance Map](#)
- [Real Estate Awareness Letter](#)
- [Physician Notice Letter](#)
- [Prospector Drain Sampling Summary](#)
- [Biocell Sampling Summary](#)

1.0 INTRODUCTION:

In a cooperative effort with the Utah Department of Environmental Quality (UDEQ) and the United States Environmental Protection Agency (USEPA), Park City Municipal Corporation (PCMC) has agreed to the implementation of an Environmental Management System (EMS) that further protects human health and the environment within the Soils Ordinance Area. The established goals of the EMS were to define the environmental procedures, monitoring, education, and controls for managing soils impacted with mine tailings. The EMS program was adopted by [resolution](#), April 15th 2004 and funded by the City Council¹. Furthermore, due to the requirements within the EMS, the City Council approved revisions to the “[Park City’s Landscaping and Maintenance of Soil Cover Ordinance](#)”² in order to support the EMS.

This report represents PCMC 2010 Annual Report that documents the EMS obligations which the City has agreed to submit to USEPA and UDEQ.

2.0 SOIL MITIGATION COMPLIANCE PROGRAM

The [2010 compliance map](#) for all properties within the original soils ordinance boundary is included within this report. The lots identified in red are properties that have been capped and are considered compliant with the ordinance. The lots identified in black, are properties that have either not been sampled or have been sampled and are under enforcement. Finally, the properties identified in yellow are lots that were capped during the Improvement District time frame and are vacant. The Soils Ordinance which can be found in Park City Building Code 11-15-1 mandates a 6” clean-topsoil substrate cap for lots that exhibit elevated lead levels that exceed 200-ppm lead.

This year there was a substantial amount of verification sampling related to re-landscaping as well as for newly capped lots. As a result, 69 properties were sampled or inspected to verify compliance with the 200 ppm lead standard. Additionally, 53 lots were issued Certificate of Compliance documents, thereby certifying compliance.

Figure 1 represents 2010 compliance status of the original soils ordinance boundary and Figure 2 represents the compliance for all properties residing within the [original](#) and [expanded](#) soils ordinance area (lots depicted in **red** have been capped):

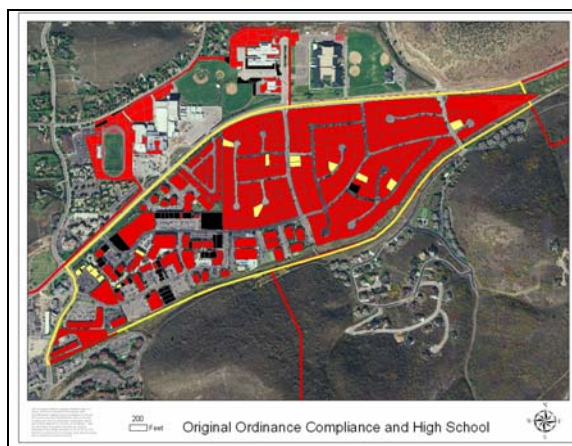


Figure 1.

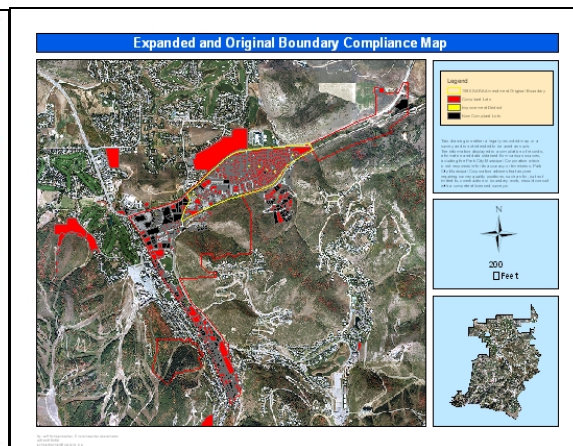


Figure 2.

¹ Tab 1 – Council Resolution - 4/15/04

² Tab 2 - Chapter 15 – 11-15-1 Building Code

Consistent with previous years, newly landscaped lots that were mitigated this year employed the conventional and xeriscape standard along with the installation of acceptable cover to protect the soil cap.

The sampling protocol for a property seeking compliance remains the same; composite samples are procured from the front, back, and both sides of the dwelling. The samples are then submitted under a Chain of Custody to Chem Tech-Ford Laboratory (State Certified) and analyzed for total lead. Upon receiving the final lab report revealing that the lead levels are <200 ppm lead, the property is considered compliant and a [Certificate of Compliance](#) is sent along with a sampling narrative, analytical results report, site map, and Homeowner BMP Brochure. Table 1.0 represents the lots that were capped this year³ and subsequent lead concentrations⁴:

Table 1.0 CAPPED LOTS

2010 Sampled Parcels		
Sample Id	Address	Lot Avg. ppm
031610D	1378 PARK AVE #1	206.66
031610KK	1600 PARK AVE	125.79
031910D	698 PARK AVE #B-1	57.5
032210	875 IRON HORSE DR	41
032310	950 IRON HORSE DR	65.033
032610	1476 PARK AVE	185.07
032610A	1478 PARK AVE	185.07
032610B	1480 PARK AVE	185.07
032610C	1482 PARK AVE	185.07
032610D	1484 PARK AVE	185.07
032610E	1486 PARK AVE	185.07
042710	3800 RICHARDSON FLAT WL	131
042710Z	3800 RICHARDSON FLAT WLB	237
051210	1300 PARK AVE #1	262
051210G	1300 PARK AVE #6	262
051210H	1300 PARK AVE #7	262
051210N	1300 PARK AVE #5	262
051210X	1300 PARK AVE #2	262
051210XX	1300 PARK AVE #3	262
051210Y	1300 PARK AVE #4	262
071310	2361 DOC HOLLIDAY DR	132
072910	2533 GERONIMO CT	30.80
082710	402 MAIN ST	29.29
090810	1245 DEER VALLEY DR	155.33

³ List includes lots within the original and expanded ordinance area.

⁴ Please note, lots exceeding the 200 ppm lead standard were lots that were previously capped in the 90s and 80s and were not considered “new landscape”. However, since the results were below USEPA Health Based Risk residential standard of 400 ppm lead, the lots were considered compliant.

2010 Sampled Parcels		
Sample Id	Address	Lot Avg. ppm
092310C	2206 COMSTOCK DR	32.06
093010	SANDRIDGE PARKING LOT	57.59
101210	2287 MONARCH DR	28.83
101210B	2288 MONARCH DR	28.83
111909	2174 COMSTOCK DR	287
120109	160 PARK AVE	125.79

3.0 REVISED SOILS ORDINANCE - ADOPTED 06-27-2006

For the year of 2010, there were no revisions to the “[Landscaping and Maintenance of Soil Cover Ordinance](#)” found within Park City Building Code Chapter 11-15. The latest major revision occurred in 2004 and the following ordinance standards were adopted and are currently applicable for all lots within the boundary:

- Acceptable cover was expanded from just grass and vegetation cover to include xeriscape-landscaping practices. Specifically the standard requires a weed barrier fabric and 6” of rock or bark.
- Soils are strictly prohibited from being transported or reused outside the Soils Ordinance Boundary.
- Soils being disposed of are to be characterized for arsenic and lead and disposed of within a permitted facility depending on the TCLP characteristics.
- The reuse of soils within the Soils Ordinance Boundary is allowed providing the area is capped and the Building Department pre-approves the site.
- The boundary was redrawn to exclude Chatham Crossing due to PCMC, USEPA, and UDEQ concurring that the area does not pose a threat to human health or the environment. This was based on evaluating several years of soils data that further substantiated this claim.
- The boundary has been expanded to include the Transit Center and the CERCLIS Marsac Mill site. The purpose of including the Transit Center was to protect the facility and the Marsac Mill site, which is known to contain elevated levels of heavy metals.
- Non-compliant lots were required to conform by December 31, 2004.
- Non-sampled and uncharacterized lots were to be sampled by 2006.
- Non-compliance has been upgraded to a nuisance and enforced as a Class B Misdemeanor.
- The lot-testing fee for compliance has been waived and is now done without a \$100.00 charge to the owner. In addition, the City conducts sampling on generated soils destined for disposal and there is no charge for TCLP analysis.
- No parking of vehicles on capped lots.

4.0 ANNUAL LOT RISK ASSESSMENT

The risk assessment was completed this year with no infractions being discovered. However, on March 9th 2010 the City sent out [113 Notice Letters](#) to owners within the expanded soils ordinance area. The intent was to obtain permission to conduct inspections and sampling on these parcels in order to determine compliance with the ordinance. As a result, the dataset compiled this year represents many owners that requested that their property be inspected and

issued a Certificate of Compliance.

4.1 *Non-Characterized Lots*

Within the original ordinance area all lots have been sampled, therefore there were no notices sent for non-characterized lots. The only exception to that statement is that there still remain non-characterized lots within the Expanded Soils Ordinance Boundary; however efforts will be made in 2011 to decrease this number to achieve 100% compliance.

5.0 NON-COMPLIANT LOTS

Within the original ordinance area the owner of [2475 Annie Oakley](#) has been issued a Final Notices letter for non-compliance. The City anticipates 100% compliance will be achieved with the capping of this lot for the original ordinance boundary in 2011.

6.0 EDUCATION AND OUTREACH

In order to assist with the EMS educational and outreach obligations, PCMC distributed two products titled “[Park City Environmental Information Handbook](#)” and “[Soils Ordinance Home Owners BMP Brochure](#)”. The Environmental Information Handbook and Home Owners BMP Brochure contain the following information:

- Soils Ordinance FAQ’s.
- Residential Best Management Practices
- Ordinance Boundary Compliance Map
- Top Soils Assistance Program (TSAP)
- Soils Ordinance Boundary Map
- Streets within Boundary
- Addresses within Boundary
- Gardening and Plant Bed Recommendations
- Storm Water Quality
- Conservation Reserve Program
- Open Space Information
- Recycling Program
- Household Waste Oil Acceptors
- Drinking Water Information
- Water Treatment Information
- Blue Sky Program
- Contacts and Reference (This section included the county contact for blood lead testing.)

This year the handbook was sent to the following entities as a reference:

- Real Estate Agents
- Land Management
- Local Pediatricians
- HOA’s
- Homebuyers
- PCMC employees
- Contractors
- Building Permit recipients

The second outreach product distributed, was the [Home Owners Best Management Practice Brochure \(Copy-Tech Invoice \\$1,624.89\)](#). The BMP brochure was sent out to all residents within the Soils Ordinance Boundary on February 5th 2010. This product is also made available in the Building and Planning Department and was sent to the EMS outreach contacts that were agreed to by the Soils Stakeholder Group.

6.1 Soil Ordinance Resident Notices

On January 13, 2010, residents that have an issued “Certificate of Compliance” were sent a [lead awareness letter](#). The purpose of the letter is to increase property owner awareness of the underlying lead levels that are contained on a per lot basis. For those that received this correspondence, the City references historical sampling data for capped lots. This data is queried from the Environmental Database and lots that exceed the USEPA Health Based Risk Standard (400 ppm lead) for residential property receive this notice.

6.2 Summit County Lead Screening Services

The Summit County Blood Lead Screening Service has been identified in both the Homeowner BMP Brochure and the Environmental Information Handbook under “contacts” and “FAQs”. The address and phone number for the county blood testing program is documented in these two outreach products for residents that wish to be tested. In addition, the City receives phone inquiries for testing children and they are referred to the Summit County Health Department.

6.3 New Residents and Renters Orientation

PCMC has supplied the Environmental Information Handbook and BMP brochure to land management and real estate agencies. This letter was sent [January 13, 2010](#) with the BMP brochures. The Building Department receives numerous calls from prospective buyers and real estate agents requesting the information handbooks and BMP brochures.

6.4 Real Estate Agent Orientation

Real Estate agencies were provided with the [Environmental Information Handbook](#) and [BMP brochure](#) for distribution and to make them aware of the ordinance standards. Nineteen agencies were sent this information on [January 15, 2010](#). During all of the educational meetings the Park City Environmental Information Handbook and storm water brochures were distributed as an educational resource. Also, the real estate community continues to use the Environmental WebGIS Module, which is located at the following link:

<http://www.mapserv.utah.gov/ParkCityGIS/>

To date the WebGIS has been an instrumental tool in educating stakeholders regarding the environmental issues and the site receives an average of 200 service requests per month.

6.5 Lead Awareness Campaign to Local Physicians

On [January 13, 2010](#), five clinics were sent an awareness correspondence along with numerous BMP brochures for distribution. The correspondence also contained the Environmental Information Handbook that identifies the addresses that reside within the ordinance boundary. Within the letter PCMC encourages physicians to test for blood lead for those clients residing within the boundary.

6.6 *Maintenance of the Environmental WebGIS Module* ***<http://www.mapserv.utah.gov/ParkCityGIS/>***

On October 3rd 2007, PCMC released a WebGIS application which is used as a resource to identify the environmental impacts within Park City limits. The WebGIS system is updated annually with the purpose of conveying the City's environmental impacts to the public via the Web.

The following is the data you will find at this site:

- **Environmental Management System Annual Reports**
Reports that are sent to regulatory agency that provides an update on current remediation.
- **Storm water Management Plan Annual Reports**
Reports that are sent to the regulatory agencies defining the city's storm water efforts to improve water quality in the watersheds.
- **Working Soils Ordinance Regulations**
The actual ordinance approved by USEPA and UDEQ.
- **Soils Ordinance Boundary Search**
The boundary that defines all regulated properties within the ordinance boundary and the search conveys whether it is within the boundary.
- **Soils Ordinance Capping Compliance**
Information provides you with compliance status and associated lead concentrations for sampled lots. Red represents compliance, black non-compliant, yellow compliant during the improvement district.
- **Known Mine Tailings Area**
Areas known to be impacted with mine tailings.
- **Mine Hazards**
Known mine hazards in the area.
- **FEMA Flood Zone Delegations**
Regulated flood zone areas within the city limits.
- **City Zoning**
Different zoning areas with the city limits.
- **Regulated Streams**
Navigable waters within the city limits.
- **Jurisdictional Wetlands**
Wetlands protected within the city limits with a 50' defined buffer.
- **Watershed Boundaries**
These layers represent East Canyon and Silver Creek Watershed.
- **Drinking Water Source Protection Zones**
Drinking water recharges source protection zones protected under ordinance.
- **10' Elevation Contours**
- **Conservation Reserve Program**
Layer represents the permanent riparian buffer zone for McLeod Creek Stream corridor.

7.0 PROSPECTOR SAMPLING RECORDS AND DATA

PCMC continues to populate a comprehensive database to track lot compliance and analytical results. The database has been populated with analytical results dating back to 1985. This data includes initial sampling projects as well as verification sampling results that are conducted after the cap is installed. The system is connected to a GIS ArcMap project that plots all capped lots and spatial evaluations can be conducted in regards to lead levels. Lastly, the GIS ArcMap

continues to expand upon the discovery of new historic mining impacts.

8.0 PROSPECTOR DRAIN OUTFALL

The biocell system is an anaerobic treatment unit located in Prospector Park for the purpose of treating the Prospector Drain outfall, thereby reducing the zinc and cadmium load to the Silver Creek Watershed. Picture 1 represents the unit pictured to the west.

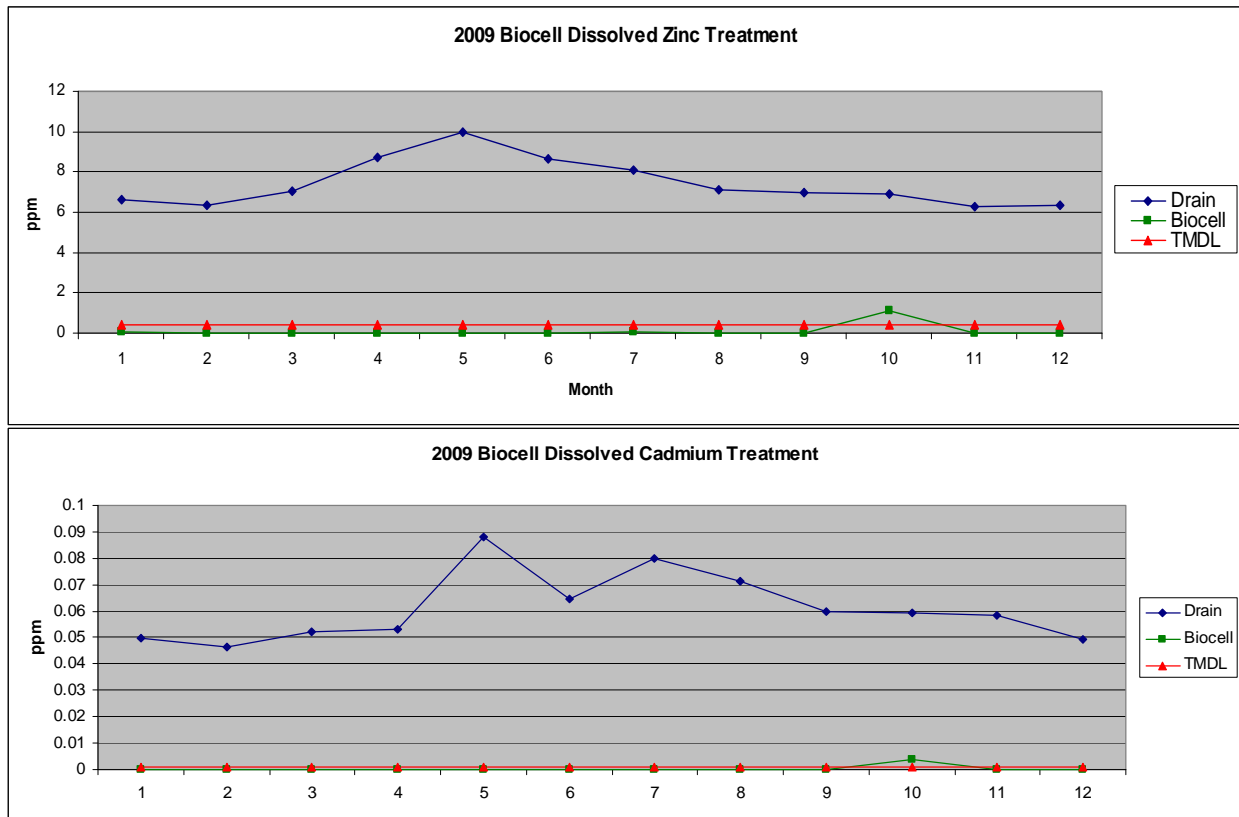


Picture 1: Biocell pictured to the west.

[Attachment 26](#) contains a summary of the sampling results for the Prospector Drain for this year. Also contained in this report is the biocell treatment summary that is represented as [Attachment 27](#). The biocell continues to be an effective BMP for treating metals that originate from the Prospector Drain. Summarizing the results for dissolved cadmium and zinc for 2009; 99.5% of the dissolved cadmium was treated and 98.3% of dissolved zinc was removed. The biocell has been recognized in the following publications as a viable treatment option for water impacted with metals:

- [“Metal Removal Efficiency and Ecotoxicological Assessment of Field-Scale Passive Treatment Biochemical Reactors”](#), USEPA Office of Research and Development, **Journal of Environmental Toxicology and Chemistry**.
- [“One Year Performance of a Full Scale Horizontal-Flow Wetland For Treating Zinc and Cadmium From a Legacy Tailings Pond”](#), **Journal of Society Metallurgy, Mining and Exploration**.
- [“Performance of a Full-Scale Horizontal-Flow Wetland for Zinc”](#) Published by **Journal of American Society of Mining and Reclamation**.
- [“Long Term Operation of Engineered Anaerobic Bioreactors and Wetland Cells Treating Zinc, Arsenic and Cadmium in Seepage – Results, Longevity, Cost and Design Issues”](#), University of Victoria, **Department of Earth and Ocean Sciences**.

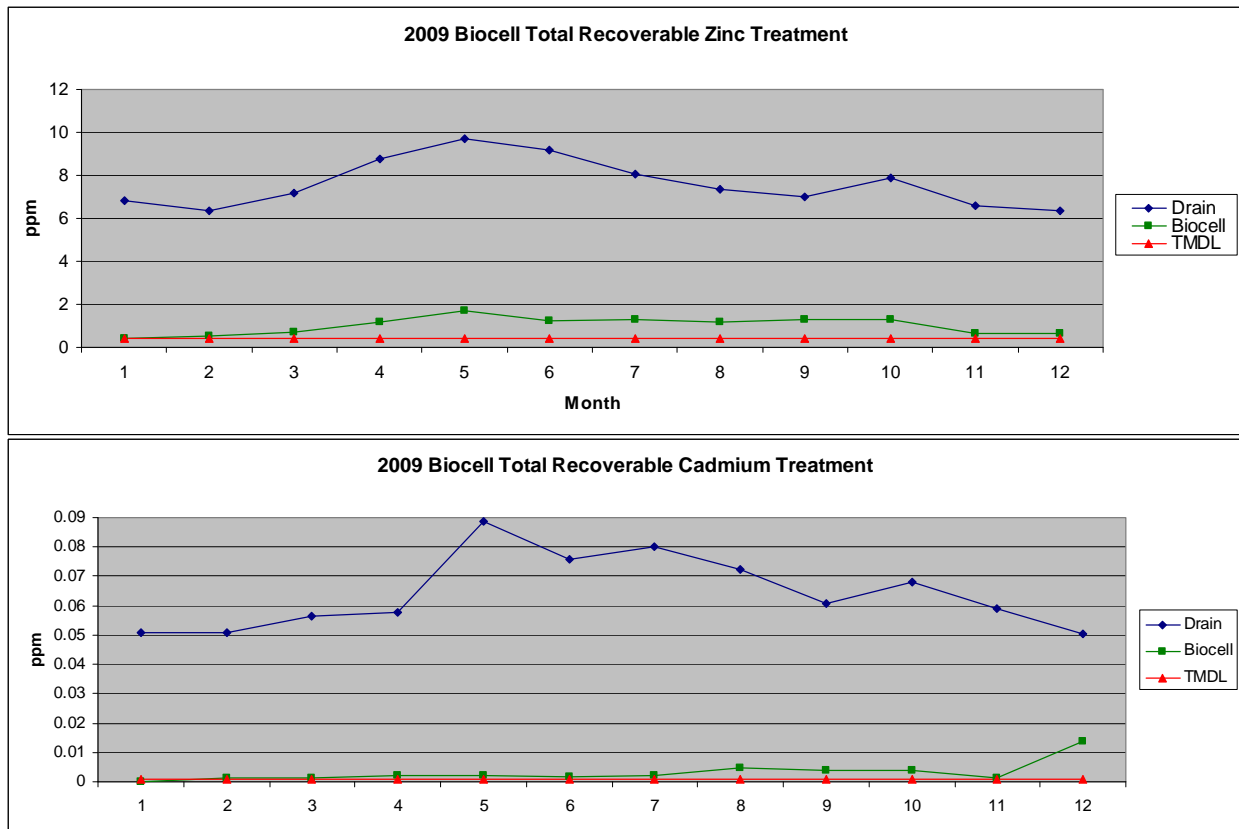
The following graph represents the results for 2009 for dissolved for zinc and cadmium compared to the Silver Creek TMDL endpoint thresholds (cadmium 0.0008 mg/L and zinc 0.39 mg/L).



After completing one year of operation for the biocell the following facts have been revealed:

- During peak spring run-off, the biocell is capable of treating ~60 – 70 gpm. However, since October of 2008 the unit has been operated conservatively to allow the system to mature. The goal for 2011 is to maximize the flow rate through the unit to determine the highest flow the unit can treat.
- The zinc and cadmium concentrations crest in May and then begin to drop during August and are stable during the winter months.
- During the year of 2009 from the end of August to May the unit typically treated 100% of the flow, with the exception of when the system is influenced by seasonal rain events or snow melt. During this time, the flow is decreased in order to not overwhelm the system. It is important to emphasize that the Prospector Drain flow is variable and is operated based on the sulfate reducing bacteria activity – specifically oxygen reduction potential field readings.
- The biocell can treat the dissolved fraction of zinc and cadmium to the TMDL endpoints but cannot meet that threshold for total recoverable metals. This was acknowledged during the Upper Silver Creek Stakeholder's meeting while the pilot test unit was operated. The limitation of the biocell is that the given area is undersized for further retention and treatment of 100% of the flow.
- Lastly, during the early winter season when flows have not yet decreased, the sulfate reducing bacteria are not as active and treatment efficiency slows. However, during 2009, to the systems benefit the winter flows also decrease to 25 gpm and the unit is able to treat 100%. During the year of 2010, due to the increase precipitation both rain and snow melt, the flow has not decreased below 50 gpm.

The following graph represents the results for 2009 for total recoverable zinc and cadmium compared to the Silver Creek TMDL endpoint thresholds (cadmium 0.0008 mg/L and zinc 0.39 mg/L).



Consistent with 2009, this year 60 cubic yards of additional bark was placed on top of the unit at a cost of [\\$2,400.00](#). The reason additional bark was placed on the unit was to eliminate any aerobic influence from standing water.

The only other modification to the unit this year will be the installation of an [electromagnetic flow meter](#) for the bypass. The bypass located within the vault is currently not metered. During the early phases of developing the biocell an upstream inline flow meter was installed within a man-hole near the parking lot. When the vault was being designed, the direction was to put a flow meter on the bypass, however, as a cost saving measure the decision was made to rely on the man-hole meter. The man-hole flow meter is no longer functional; therefore the new flow meter will replace the old unit in order to measure the flow that is bypassed.

As stated in the Silver Creek TMDL, the biocell is recognized as a BMP as stipulated in Section 10.2 Implementation Measures by Site:

Prospector Square (site inspection 11/8/2002)

Recommended BMPs include: rerouting of the drainage pipe from Prospector Square away from Silver Creek to a constructed wetland area for treatment. The water from the treatment wetland will eventually make its way back to Silver Creek; enhance the existing wetland complex by enlarging the emergent marsh areas and by planting heavy metal removing plant species. Enhancement should also include site monitoring and maintenance. Additionally, ensuring that the Park City contaminated soil ordinance is enforced and that proper erosion control measures are employed during construction and other earth disturbing activities.

9.0 TOP SOIL ASSISTANCE PROGRAM (TSAP)

Consistent with Council policy direction and to encourage accelerated compliance with the Soils Ordinance, to date \$33,246.00 has been allotted to property owners for installing acceptable cover. This program provides property owners with assistance and incentive to procure compliant topsoil to adequately cap properties with known elevated lead levels. The TSAP has been divided into two funding phases; Phase I is specific to lots within the Original Ordinance Boundary (Prospector) and a Phase II is for the properties within the entire Soils Ordinance Boundary (Original and Expanded). The program was approved and funded by the City Council on August 11th 2004 and is administered by the Building Department. Upon issuance of a Certificate of Compliance the owner is provided with a TSAP summary fact sheet and instructions for reimbursement.